

What is claimed is:

1 1. A supercapacitor structure comprising in contiguity a
2 positive electrode member, a negative electrode member, and a
3 separator member interposed therebetween

4 c h a r a c t e r i z e d i n t h a t

5 a) each of said electrode members comprises an activated
6 carbon fabric element to which is bonded an electrically-
7 conductive current collector element,

8 b) said separator member comprises a micro-fibrillar ultra-
9 high molecular weight polyolefin membrane, and

10 c) each said member is bonded to one or more contiguous
11 members at its respective interface to form a unitary flexible
12 laminate structure.

1 2. A supercapacitor structure according to claim 1 wherein
2 said polyolefin membrane comprises polyethylene.

1 3. A supercapacitor structure according to claim 1 wherein at
2 least one of said collector elements comprises an open-mesh
3 grid.

1 4. A supercapacitor structure according to claim 3 wherein
2 said collector element grids are thermally bonded to associated
3 carbon fabric by an electrically-conductive thermoadhesive
4 composition.

5. A supercapacitor structure according to claim 4 wherein said carbon fabric electrode elements are thermally bonded to the interposed separator member by virtue of the thermoadhesive nature of said polyolefin membrane.

6. A method of making a supercapacitor structure which comprises arranging contiguously a positive electrode member, a negative electrode member, and a separator member interposed therebetween

characterized in that

a) each of said electrode members is formed of an activated carbon fabric element bonded to an electrically-conductive current collector element,

b) said separator member is formed of a micro-fibrillar ultra-high molecular weight polyolefin membrane, and

c) each said member is bonded to one or more contiguous members at its respect interface to form a unitary flexible laminate structure.

7. A method according to claim 6 wherein

a) at least one surface of each said collector element is coated with a layer of electrically-conductive thermoadhesive composition,

b) each fabric electrode element is arranged in surface contact with the coated surface of its associated collector element to form a subassembly, and

c) said subassembly is laminated under heat and pressure to form a unitary electrode member.

1 8. A method according to claim 7 wherein
2 a) the exposed fabric surface of each said electrode member
3 is arranged in contact with a respective surface of said
4 separator member, and
5 b) said arrangement is laminated under heated and pressure
6 to soften at least said separator member surfaces and effect an
7 adhesive laminate bond between said members.